REMARKS

Consideration of the newly added claims is requested.

Claims 1, 12-14, 20, 21, 26-35, and 76-141 are pending. Support for the newly added claims is in the original claims as filed, and throughout the specification, including the Example. Additional support for the amendments to Claims 68 and 72 is at page 8, lines 18-28. Support for the newly added claims is as follows:

Claims 76-78: Original Claims 56-58;

Claim 79: Original Claim 72;

Claims 80-84 and 86-97: page 8, lines 3-17;

Claim 85: Original Claim 35;

Claims 98-110: page 9, lines 1-8;

Claims 111-133: page 8, lines 18-29, page 10, lines 3-8; and

Claims 134-141: page 10, line 20 to page 11, line 10.

It is respectfully submitted that the claims are in condition for allowance and notification to that effect is earnestly solicited. The Examiner is urged to telephone the undersigned attorney if any questions should arise.

Respectfully submitted,

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WHAT IS CLAIMED IS:

1. (amended) A method of cleaning wafer surfaces, comprising the steps of:

providing a wafer surface bearing overlying material thereon; and

cleaning the wafer surface by removing at least a portion of the overlying material from the wafer surface by applying an aqueous solution comprising ~~a major amount of~~ one or more inorganic fluorine-comprising compounds and one or more organic acids in a ratio of about 100:1 to about 55:45 (v/v), the solution having a pH of about 3 to about 9, such that the surface of the wafer is rendered substantially hydrophobic.

~~2. The method of Claim 3, wherein the overlying material on the surface of the wafer comprises a low-k dielectric layer, and the step of cleaning the wafer surface comprises removing the dielectric layer at a rate of greater than about 1000 angstroms per minute.~~

~~3. The method of Claim 2, wherein the aqueous solution comprises one or more hydrofluoric acid and one or more organic acids in a ratio of about 2:1 (v/v), such that the dielectric layer is removed at a rate of about 2500 angstroms per minute.~~

~~4. The method of Claim 2, wherein the aqueous solution comprises at least ammonium fluoride and one or more organic acids in a ratio of about 2:1 (v/v).~~

~~5. The method of Claim 1, wherein the overlying material on the surface of the wafer comprises a low-k dielectric layer, and the step of cleaning the wafer surface comprises removing the dielectric layer from the wafer surface at a rate of about 50 to about 1000 angstroms per minute.~~

~~6. The method of Claim 5, wherein the aqueous solution comprises at least hydrofluoric acid and one or more organic acids in a ratio of about 1:2 (v/v), such that the dielectric layer is removed at a rate of about 400 to about 600 angstroms per minute.~~

~~7. The method of Claim 5, wherein the aqueous solution comprises at least ammonium fluoride and one or more organic acids in a ratio of about 2:1, such that the dielectric layer is removed at a rate of about 50-150 angstroms per minute.~~

~~8. The method of Claim 1, wherein the overlying material on the surface of the wafer comprises a low-k dielectric layer, and a photoresist layer overlying the dielectric layer and the step of cleaning the wafer surface comprises removing the dielectric layer and the photoresist layer at a rate of about 50 to about 1000 angstroms per minute.~~

~~9. The method of Claim 8, wherein the aqueous solution comprises at least hydrofluoric acid and one or more organic acids in a ratio of about 1:2 (v/v), such that the dielectric layer is removed at a rate of about 400 to about 600 angstroms per minute.~~

~~10. The method of Claim 9, wherein the aqueous solution comprises at least ammonium fluoride and one or more organic acids in a ratio of about 2:1 (v/v), such that the dielectric layer is removed at a rate of about 100 angstroms per minute.~~

~~11. The method of Claim 1, wherein the composition is an aqueous solution consisting essentially of the one or more in organic fluorine-comprising compounds and the one or more organic acids.~~

12. (amended) A method for surface treating wafer surfaces, comprising the steps of:

providing a wafer surface having a low-k dielectric layer disposed thereon and a photoresist layer overlying the dielectric layer; and

treating the wafer surface to remove at least a portion of the dielectric layer with minimal removal of the photoresist layer, by applying an aqueous solution of one or more inorganic fluorine-comprising compounds and one or more organic acids, the solution having a pH of ~~about 3 to about 6~~ about 2 to about 6, such that the dielectric layer is ~~removed selective to the photoresist~~ selectively removed at a rate of greater than about 1000 angstroms per minute.

13. The method of Claim 12, wherein the aqueous solution comprises at least hydrofluoric acid and the one or more organic acids in a ratio of about 2:1 (v/v), such that the dielectric layer is selectively removed at a rate of about 2300 to about 2700 angstroms per minute.

14. The method of Claim 12, wherein the aqueous solution comprises at least ammonium fluoride and the one or more organic acids in a ratio of about 2:1 (v/v).

~~15. A method for surface treating wafer surfaces, comprising the steps of:~~

~~providing a wafer surface having a low-k dielectric layer disposed thereon and a photoresist layer overlying the dielectric layer; and~~

~~treating the wafer surface to remove at least a portion of the dielectric layer with minimal removal of the photoresist layer, by applying an aqueous solution of one or more inorganic fluorine-comprising compounds and one or more organic acids in a ratio of about 1:2 (v/v), and having a pH of about 3 to about 9 such that the dielectric layer is removed selective to the photoresist at a rate of about 50 to about 1000 angstroms per minute.~~

~~16. The method of Claim 15, wherein the aqueous solution comprises at least hydrofluoric acid, and the dielectric layer is selectively removed at a rate of about 400 to about 600 angstroms per minute.~~

~~17. The method of Claim 15, wherein the aqueous solution comprises at least ammonium fluoride and the one or more organic acids in a ratio of about 2:1 (v/v), such that the dielectric layer is selectively removed at a rate of about 50 to about 150 angstroms per minute.~~

~~18. A post-etch cleaning to selectively remove a low-k dielectric material from a wafer, comprising:~~

~~providing a wafer surface having a layer of the low-k dielectric material disposed thereon and a photoresist layer overlying the dielectric layer; and~~

~~treating the wafer surface to remove at least a portion of the dielectric layer, by apply an aqueous solution of a least one inorganic fluorine-comprising compound and at least one organic acid component in a ratio of about 1:2 (v/v), the solution having a pH of about 3 to about 9, such that the removal rate of the low-k dielectric material is controlled at about 50 to about 1000 angstroms per minute.~~

~~19. A method of cleaning wafer surfaces, the method comprising the steps of:~~

~~providing an aqueous solution comprising at least one inorganic fluorine-comprising compound and at least one organic acid;~~

~~providing a wafer having an unmasked low-k dielectric material disposed on at least a portion of one surface; and~~

~~contacting the surface of the wafer having the low-k dielectric material thereon with the aqueous solution under conditions effective to remove at least a portion of the low-k dielectric material at a rate of greater than about 1000 angstroms per minute.~~

20. A method of cleaning wafer surfaces, the method comprising the steps of:

providing an aqueous solution comprising at least one inorganic fluorine-comprising compound selected from the group consisting of hydrofluoric acid and ammonium fluoride, and mixtures thereof; and at least one organic acid selected from the group consisting of citric acid, acetic acid, ascorbic acid, and mixtures thereof;

providing a wafer having a low-k dielectric material disposed on at least a portion of one surface; and

contacting the surface of the wafer having the low-k dielectric material thereon with the aqueous solution under conditions effective to remove at least a portion of the low-k dielectric material at a rate of about 50 to about 1000 angstroms per minute.

21. The method of Claim 20, wherein the aqueous solution comprises about 30 % to about 70 % by volume of the fluorine-comprising compound, and about 30 % to about 70 % by volume of the organic acid, based on the total volume of the solution.

~~22. The method of Claim 20, wherein the aqueous solution includes at least hydrofluoric acid and at least one organic acid in a ratio of about 1:2 (v/v), to remove at least a portion of the low-k material at a rate of about 400 to about 600 angstroms per minute.~~

~~23. The method of Claim 22, wherein the aqueous solution includes about 30 to about 40 % by volume of hydrofluoric acid, and about 60 to about 70 % by volume of the organic acid.~~

~~24. The method of Claim 20, wherein the aqueous solution includes at least ammonium fluoride and at least one organic acid in a ratio of about 2:1 (v/v), to remove at least a portion of the low-k material at a rate of about 50 to about 150 angstroms per minute.~~

~~25. The method of Claim 24, wherein the aqueous solution includes about 60 to about 70 % by volume of ammonium fluoride, and about 30 to about 40 % by volume of the organic acid.~~

26. A method of cleaning wafer surfaces, the method comprising the steps of:

providing an aqueous solution comprising an inorganic fluorine-comprising compound selected from the group consisting of hydrofluoric acid and ammonium fluoride, and mixtures thereof; and an organic acid selected from the group consisting of citric acid, acetic acid, ascorbic acid, and mixtures thereof;

providing a wafer having a low-k dielectric material disposed on at least a portion of one surface; and

contacting the surface of the wafer having the low-k dielectric material thereon with the aqueous solution under conditions effective to remove at least a portion of the low-k dielectric material at a rate greater than about 1000 angstroms per minute.

27. The method of Claim 26, wherein the aqueous solution includes at least hydrofluoric acid and one or more organic acids in a ratio of about 2:1 (v/v).

28. The method of Claim 27, wherein the aqueous solution includes about 63 to about 70 % by volume of hydrofluoric acid, and about 30 to about 36 % by volume of the one or more organic acids.

29. The method of Claim 26, wherein the aqueous solution includes at least ammonium fluoride and one or more organic acids in a ratio of about 2:1 (v/v).

30. The method of Claim 26, wherein the aqueous solution includes about 63 to about 70 % by volume of ammonium fluoride, and about 30 to about 36 % by volume of the one or more organic acids.

31. (amended) A method of surface treating wafer surfaces, comprising the steps of:

providing a wafer surface having a low-k dielectric layer disposed thereon and a photoresist layer overlying the dielectric layer; and

providing an aqueous composition comprising at least one inorganic fluorine-comprising compound, and a major amount of one or more organic acids; and

contacting the surface of the wafer having the low-k dielectric and photoresist layers thereon with the composition under conditions effective to selectively remove the photoresist layer while leaving the low-k layer ~~essentially~~ substantially intact on the substrate.

32. (amended) The method of Claim 31, wherein the composition comprises an aqueous solution of at least hydrofluoric acid and the one or more organic acids in a ratio of about 1:100 to about 45:55 (v/v), such that the composition removes the photoresist mask substantially completely from the surface ~~selective to the dielectric layer~~.

33. The method of Claim 31, wherein the inorganic fluorine-comprising compound is selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof; and the organic acid is selected from the group consisting of citric acid, gallic acid, acetic acid, formic acid, propionic acid, n-butyric acid, isobutyric acid, benzoic acid, ascorbic

acid, gluconic acid, malic acid, malonic acid, oxalic acid, succinic acid, tartaric acid, and mixtures thereof.

34. The method of Claim 31, wherein the organic acid is selected from the group consisting of citric acid, acetic acid, ascorbic acid, and mixtures thereof.

35. The method of Claim 31, wherein the step of contacting the surface of the wafer comprises immersing the wafer in a bath of the composition, spraying the surface of the wafer with the composition, exposing the wafer to a vapor, or any combination thereof.

~~36. A method of cleaning wafer surfaces, comprising:~~

~~formulating an aqueous composition for selectively removing at least a portion of a low-k dielectric layer from a wafer surface at a predetermined rate, the composition consisting essentially of one or more inorganic fluorine-comprising compounds and one or more organic acids, and having a pH of about 3 to about 9;~~

~~providing a wafer having a low-k dielectric material disposed on at least a portion of one surface; and~~

~~contacting the wafer having the low-k dielectric material thereon with the composition under conditions effective to remove at least a portion of the low-k dielectric material at the predetermined rate.~~

~~37. The method of Claim 36, wherein the inorganic fluorine-comprising compound is selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof; and the organic acid is selected from the group consisting of citric acid, acetic acid, ascorbic acid, and mixtures thereof.~~

~~38. The method of Claim 36, wherein the composition is formulated to remove the dielectric layer at a rate greater than about 1000 angstroms per minute.~~

~~39. The method of Claim 36, wherein the composition is formulated to remove the dielectric layer at a rate of about 50 to about 1000 angstroms per minute.~~

~~40. The method of Claim 36, wherein at least a portion of the low-k dielectric layer is unmasked.~~

~~41. The method of Claim 36, wherein at least a portion of the low-k dielectric layer is masked by an overlying layer of photoresist.~~

~~42. The method of Claim 41, wherein the composition is formulated to remove the dielectric layer and the photoresist layer from the surface of the wafer, such that the surface of the substrate is rendered substantially hydrophobic.~~

~~43. The method of Claim 41, wherein the composition is formulated to remove the dielectric layer selective to the photoresist at a rate of about 50 to about 1000 angstroms per minute.~~

~~44. The method of Claim 41, wherein the composition is formulated to remove the dielectric layer selective to the photoresist at a rate of greater than about 1000 angstroms per minute.~~

~~45. A method of cleaning wafer surfaces, comprising:~~

~~formulating an aqueous composition for selectively removing at least a portion of a low-k dielectric layer disposed on the wafer surface at a predetermined rate, the composition consisting essentially of one or more organic fluorine-comprising compounds and one or more inorganic acids, and having a pH of about 3 to about 9;~~

~~providing a wafer having a low-k dielectric material disposed on at least a portion of one surface; and~~

~~contacting the wafer having the low-k dielectric material thereon with the composition under conditions effective to remove at least a portion of the low-k dielectric material at the predetermined rate.~~

~~46. The method of Claim 45, wherein the organic fluorine-comprising compound is selected from the group consisting of hydrogen fluoride pyridinium, triethylamine trihydrofluoride, tetramethylammonium fluoride, and mixtures thereof.~~

~~47. The method of Claim 45, wherein the inorganic acid is selected from the group consisting of sulfuric acid, nitric acid, hydrochloric acid, phosphoric acid, and mixtures thereof.~~

~~48. The method of Claim 45, wherein the composition is formulated to remove the dielectric layer at a rate greater than about 1000 angstroms per minute.~~

~~49. The method of Claim 45, wherein the composition is formulated to remove the dielectric layer at a rate of about 50 to about 1000 angstroms per minute.~~

~~50. The method of Claim 45, wherein at least a portion of the low-k dielectric layer is unmasked.~~

~~51. The method of Claim 45, wherein at least a portion of the low-k dielectric material is masked by an overlying layer of photoresist.~~

~~52. The method of Claim 51, wherein the composition is formulated to remove the dielectric layer and the photoresist layer from the surface of the wafer such that the surface of the substrate is rendered substantially hydrophobic.~~

~~53. The method of Claim 51, wherein the composition is formulated to remove the dielectric layer selective to the photoresist at a rate of about 50 to about 1000 angstroms per minute.~~

~~54. [53]. The method of Claim 51, wherein the composition is formulated to remove the dielectric layer selective to the photoresist at a rate of greater than about 1000 angstroms per minute.~~

~~55. [54.] A composition for cleaning or treating a surface of a semiconductor wafer, comprising:~~

~~an aqueous solution of a major amount of one or more inorganic fluorine-comprising compounds and one or more organic acids in a ratio of about 100:1 to about 55:45 (v/v), to remove organic material and low-k dielectric material from the surface of the wafer whereby the surface of the substrate is rendered substantially hydrophobic; the composition having a pH of about 3 to about 9.~~

~~56. [55.] The composition of Claim 54, wherein the inorganic fluorine-comprising compound is selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof.~~

~~57. [56.] The composition of Claim 54, wherein the organic acid is selected from the group consisting of citric acid, gallic acid, acetic acid, formic acid, propionic acid, n-butyric acid, isobutyric acid, benzoic acid, ascorbic acid, gluconic acid, malic acid, malonic acid, oxalic acid, succinic acid, tartaric acid, and mixtures thereof.~~

~~58. [57.] The composition of Claim 54, wherein the organic acid is selected from the group consisting of citric acid, acetic acid, ascorbic acid, and mixtures thereof.~~

~~59 [58.] The composition of Claim 54, wherein the aqueous solution consists essentially of the one or more inorganic fluorine-comprising compounds and the one or more organic acids.~~

~~60. [59.] The composition of Claim 54, wherein the aqueous solution includes at least hydrofluoric acid and at least one organic acid in a ratio of about 1:2 (v/v).~~

~~61. [60.] The composition of Claim 59, wherein the aqueous solution includes about 30 to about 40 % by volume of hydrofluoric acid, and about 60 to about 70 % by volume of the organic acid.~~

~~62. [61.] The composition of Claim 54, wherein the aqueous solution includes at least ammonium fluoride and at least one organic acid in a ratio of about 2:1 (v/v).~~

~~63. [62.] The composition of Claim 61, wherein the aqueous solution includes about 60 to about 70 % by volume of ammonium fluoride, and about 30 to 40 % by volume of the organic acid.~~

~~64. [63.] A composition for cleaning or treating a surface of a semiconductor wafer, comprising:~~

~~an aqueous solution of a major amount of one or more organic fluorine-comprising compounds and one or more inorganic acids in a ratio of about 1:5 (v/v), to remove organic material and low-k dielectric material from the surface of the wafer such that the surface of the substrate is rendered substantially hydrophobic; the composition having a pH of about 3 to about 9.~~

~~65. [64.] The composition of Claim 63, wherein the organic fluorine-comprising compound is selected from the group consisting of hydrogen fluoride pyridinium, tetramethylammonium fluoride, triethylamine trihydrofluoride, and mixtures thereof.~~

~~66. [65.] The composition of Claim 63, wherein the inorganic acid is selected from the group consisting of sulfuric acid, nitric acid, hydrochloric acid, phosphoric acid, and mixtures thereof.~~

~~67. [66.] The composition of Claim 63, wherein the aqueous solution consists essentially of the one or more organic fluorine-comprising compounds and the one or more inorganic acids.~~

~~68. [67.] A composition for surface treating wafer surfaces, comprising:~~

~~an aqueous solution of a major amount of one or more inorganic fluorine-comprising compounds and one or more organic acids to remove organic material and low-k dielectric~~

~~material from the surface of the wafer, such that the dielectric layer is removed selective to the photoresist at a rate of about 50 to about 1000 angstroms per minute; the composition having a pH of about 3 to about 9.~~

~~69. [68.] The composition of Claim 67, wherein the aqueous solution comprises at least hydrofluoric acid, and the dielectric layer is selectively removed at a rate of about 400 to about 600 angstroms per minute.~~

~~70. [69.] The composition of Claim 67, wherein the aqueous solution comprises at least ammonium fluoride and the one or more organic acids in a ratio of about 2:1 (v/v), such that the dielectric layer is selectively removed at a rate of about 50 to about 150 angstroms per minute.~~

~~71. [70.] The composition of Claim 67, wherein the composition is an aqueous solution consisting essentially of the one or more in organic fluorine-comprising compounds and the one or more organic acids.~~

~~72. [71.] A composition for surface treating wafer surfaces, comprising:~~

~~an aqueous solution of a major amount of one or more inorganic fluorine-comprising compounds and one or more organic acids to remove organic material and low-k dielectric material from the surface of the wafer, such that the dielectric layer is removed selective to the photoresist at a rate up to than about 1000 angstroms per minute; the composition having a pH of about 3 to about 9.~~

~~73. [72.] The composition of Claim 71, wherein the aqueous solution comprises at least hydrofluoric acid and the one or more organic acids in a ratio of about 1:2 (v/v), whereby the dielectric layer is selectively removed at a rate of about 400 to about 600 angstroms per minute.~~

~~74. [73.] The composition of Claim 71, wherein the aqueous solution comprises at least ammonium fluoride and the one or more organic acids in a ratio of about 2:1 (v/v), whereby the dielectric layer is selectively removed at a rate of about 50 to about 150 angstroms per minute.~~

~~75. [74.] The composition of Claim 71, wherein the composition is an aqueous solution consisting essentially of the one or more in organic fluorine-comprising compounds and the one or more organic acids.~~

76. (new) The method of Claim 1, wherein the inorganic fluorine-comprising compound is selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof.

77. (new) The method of Claim 1, wherein the organic acid is selected from the group consisting of citric acid, gallic acid, acetic acid, formic acid, propionic acid, n-butyric acid, isobutyric acid, benzoic acid, ascorbic acid, gluconic acid, malic acid, malonic acid, oxalic acid, succinic acid, tartaric acid, and mixtures thereof.

78. (new) The method of Claim 1, wherein the organic acid is selected from the group consisting of citric acid, acetic acid, ascorbic acid, and mixtures thereof.

79. (new) A method of cleaning a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to remove organic material and low-k dielectric material from the surface of the substrate, the aqueous solution effective to selectively remove the dielectric layer at a rate greater than about 2000 angstroms per minute; the aqueous solution comprising one or more organic fluorine-comprising compounds and one or more inorganic acids, and having a pH of about 2 to about 6.

80. (new) A method of cleaning a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove dielectric material and organic material and render the surface hydrophobic; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 1:2 to about 2:1 (v/v), and having a pH of about 3 to about 6.

81. (new) The method of Claim 80, wherein the aqueous solution removes the dielectric material at a rate of about 50 to about 1000 angstroms per minute.

82. (new) The method of Claim 80, wherein the aqueous solution removes the dielectric material at a rate of about 50 to about 600 angstroms per minute.

83. (new) The method of Claim 80, wherein the aqueous solution comprises hydrofluoric acid and an organic acid in a ratio of about 1:2 (v/v), and has a pH of about 3 to about 4; and the aqueous solution removes the dielectric material at a rate of about 400 to about 600 angstroms per minute.

84. (new) The method of Claim 80, wherein the aqueous solution comprises ammonium fluoride and an organic acid in a ratio of about 2:1 (v/v), and has a pH of about 4 to about 6; and the aqueous solution removes the dielectric material at a rate of about 50 to about 150 angstroms per minute.

85. (new) The method of Claim 80, wherein the step of contacting the surface of the wafer comprises immersing the wafer in a bath of the composition, spraying the surface of the wafer with the composition, exposing the wafer to a vapor, or any combination thereof.

86. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material to render the surface hydrophobic, the aqueous solution comprising an

inorganic fluorine compound and an organic acid in a ratio of about 1:2 to about 2:1 (v/v), and having a pH of about 3 to about 6; the inorganic fluorine compound selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof.

87. (new) The method of Claim 86, wherein the organic acid is selected from the group consisting of citric acid, gallic acid, acetic acid, formic acid, propionic acid, n-butyric acid, isobutyric acid, benzoic acid, ascorbic acid, gluconic acid, malic acid, malonic acid, oxalic acid, succinic acid, tartaric acid, and mixtures thereof.

88. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom and render the surface of the substrate hydrophobic; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 1:2 to about 2:1 (v/v), and having a pH of about 3 to about 6; the inorganic fluorine compound selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof; the organic acid selected from the group consisting of citric acid, acetic acid, ascorbic acid, and mixtures thereof.

89. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom at a rate of about 400 to about 600 angstroms/minute to render the surface hydrophobic; the aqueous solution comprising hydrofluoric acid and an organic acid in a ratio of about 1:2 (v/v), and having a pH of about 3 to about 4.

90. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom at a rate of about 50 to about 150 angstroms/minute to render the surface hydrophobic; the aqueous solution comprising ammonium fluoride and an organic acid in a ratio of about 2:1 (v/v), and having a pH of about 4 to about 6.

91. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom at a rate of about 50 to about 150 angstroms/minute to render the surface hydrophobic; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 30:70 to about 70:30 % by volume, and having a pH of about 3 to about 6.

92. (new) The method of Claim 91, wherein the aqueous solution removes the dielectric material at a rate of about 50 to about 1000 angstroms per minute.

93. (new) The method of Claim 91, wherein the aqueous solution removes the dielectric material at a rate of about 50 to about 600 angstroms per minute.

94. (new) The method of Claim 91, wherein the aqueous solution comprises hydrofluoric acid and an organic acid in a ratio of about 30:70 to about 40:60 % by volume, and has a pH of about 3 to about 4, and the aqueous solution removes the dielectric material at a rate of about 400 to about 600 angstroms per minute.

95. (new) The method of Claim 91, wherein the aqueous solution comprises ammonium fluoride and an organic acid in a ratio of about 60:40 to about 70:30 % by volume, and has a pH of about 4 to about 6, and the aqueous solution removes the dielectric material at a rate of about 50 to about 150 angstroms per minute.

96. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove dielectric material from the surface of the substrate at a rate of about 400 to about 600 angstroms/minute; the aqueous solution comprising hydrofluoric acid and an organic acid in a ratio of about 30:70 to about 40:60 % by volume, and having a pH of about 3 to about 4.

97. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove dielectric material therefrom at a rate of about 50 to about 150 angstroms per minute; the aqueous solution comprising ammonium fluoride and an organic acid in a ratio of about 60:40 to about 70:30 % by volume, and having a pH of about 4 to about 6.

98. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom and render the surface hydrophobic; the aqueous solution comprising an organic fluorine compound and an inorganic acid in a ratio of about 1:5 (v/v).

99. (new) The method of Claim 98, wherein the organic fluorine-comprising compound is selected from the group consisting of hydrogen fluoride pyridinium, tetramethylammonium fluoride, triethylamine trihydrofluoride, and mixtures thereof.

100. (new) The method of Claim 98, wherein the aqueous solution removes the dielectric material at a rate of about 50 to about 1000 angstroms per minute.

101. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom and render the surface substantially hydrophobic; the aqueous solution comprising an organic fluorine compound and an inorganic acid in a ratio of about 1:5 (v/v); the organic fluorine-comprising compound selected from the group consisting of hydrogen fluoride pyridinium, tetramethylammonium fluoride, triethylamine trihydrofluoride, and mixtures thereof.

102. (new) The method of Claim 101, wherein the aqueous solution removes the dielectric material at a rate of about 700 angstroms per minute.

103. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom to render the surface substantially hydrophobic; the aqueous solution comprising an organic fluorine compound and an inorganic acid in a ratio of about 1:5 (v/v); the organic fluorine-comprising compound selected from the group consisting of hydrogen fluoride pyridinium, tetramethylammonium fluoride, triethylamine trihydrofluoride, and mixtures thereof; and the inorganic acid selected from the group consisting of sulfuric acid, nitric acid, hydrochloric acid, phosphoric acid, and mixtures thereof.

104. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom to render the surface substantially hydrophobic; the aqueous solution comprising hydrogen fluoride pyridinium and an inorganic acid in a ratio of about 1:5 (v/v).

105. (new) A method of treating a surface of a semiconductor substrate, comprising the steps of:

applying an aqueous solution to the surface of the substrate to remove organic material and dielectric material therefrom to render the surface substantially hydrophobic; the aqueous solution comprising an organic fluorine compound and an inorganic acid in a ratio of about 13:86 to about 19:80 % by volume.

106. (new) The method of Claim 105, wherein the organic fluorine-comprising compound is selected from the group consisting of hydrogen fluoride pyridinium, tetramethylammonium fluoride, triethylamine trihydrofluoride, and mixtures thereof.

107. (new) The method of Claim 105, wherein the aqueous solution removes the dielectric material at a rate of about 50 to about 1000 angstroms per minute.

108. (new) The method of Claim 105, wherein the aqueous solution removes the dielectric material at a rate of about 700 angstroms per minute.

109. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to remove organic material and dielectric material therefrom at a rate of about 50 to about 1000 angstroms per minute to render the surface substantially hydrophobic; the aqueous solution comprising hydrogen fluoride pyridinium and an inorganic acid in a ratio of about 13:86 to about 19:80 % by volume.

110. (new) The method of Claim 109, wherein aqueous solution removes the dielectric material at a rate of about 700 angstroms per minute.

111. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove dielectric material and up to a minimal amount of organic material therefrom; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 2:1 (v/v), and having a pH of about 2 to about 6.

112. (new) The method of Claim 111, wherein the aqueous solution removes the dielectric material at a rate of greater than about 1000 angstroms per minute.

113. (new) The method of Claim 111, wherein the aqueous solution removes the dielectric material at a rate of greater than about 2000 angstroms per minute.

114. (new) The method of Claim 111, wherein aqueous solution removes the organic material at a rate of about 1 angstrom per minute.

115. (new) The method of Claim 111, wherein the aqueous solution provides an etch selectivity ratio for the dielectric material to organic material of about 50:1 to about 1000:1.

116. (new) The method of Claim 111, wherein the inorganic fluorine-comprising compound is selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof.

117. (new) The method of Claim 111, wherein the organic acid is selected from the group consisting of citric acid, gallic acid, acetic acid, formic acid, propionic acid, n-butyric acid, isobutyric acid, benzoic acid, ascorbic acid, gluconic acid, malic acid, malonic acid, oxalic acid, succinic acid, tartaric acid, and mixtures thereof.

118. (new) The method of Claim 111, wherein the organic acid is selected from the group consisting of citric acid, acetic acid, ascorbic acid, and mixtures thereof.

119. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove dielectric material therefrom at a rate of greater than about 1000 angstroms per minute; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 2:1 (v/v), and having a pH of about 2 to about 6; the inorganic fluorine compound selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof.

120. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove dielectric material therefrom at an etch selectivity ratio for the dielectric material to organic material of about 50:1 to about 1000:1; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 2:1 (v/v), and having a pH of about 2 to about 6; the inorganic fluorine compound selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof.

121. (new) The method of Claim 120, wherein the aqueous solution selectively removes the dielectric material at a rate of greater than about 1000 angstroms per minute.

122. (new) The method of Claim 120, wherein the aqueous solution selectively removes the dielectric material at a rate of greater than about 2000 angstroms per minute.

123. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove low-k dielectric material and up to a minimal amount of organic material therefrom; the aqueous solution comprising hydrofluoric acid and an organic acid in a ratio of about 2:1 (v/v), and having a pH of about 2 to about 5.

124. (new) The method of Claim 123, wherein the aqueous solution selectively removes the low-k dielectric material at an etch selectivity ratio for the dielectric material to organic material of about 50:1 to about 1000:1.

125. (new) The method of Claim 123, wherein the aqueous solution selectively removes the dielectric material at a rate of greater than about 1000 angstroms per minute.

126. (new) The method of Claim 123, wherein the aqueous solution selectively removes the dielectric material at a rate of greater than about 2000 angstroms per minute.

127. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove low-k dielectric material and up to a minimal amount of organic material therefrom; the aqueous solution comprising ammonium fluoride and an organic acid in a ratio of about 2:1 (v/v), and having a pH of about 3 to about 6.

128. (new) The method of Claim 127, wherein the aqueous solution selectively removes the low-k dielectric material at an etch selectivity ratio for the dielectric material to organic material of about 50:1 to about 1000:1.

129. (new) The method of Claim 127, wherein the aqueous solution selectively removes the dielectric material at a rate of greater than about 1000 angstroms per minute.

130. (new) The method of Claim 127, wherein the aqueous solution selectively removes the dielectric material at a rate of greater than about 2000 angstroms per minute.

131. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove low-k dielectric material and up to a minimal amount of organic material therefrom; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 63:36 to about 70:30 % by volume, and having a pH of about 2 to about 6.

132. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove low-k dielectric material therefrom at a rate of greater than about 1000 angstroms per minute; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 63:36 to about 70:30 % by volume, and having a pH of about 2 to about 6; the

inorganic fluorine compound selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof.

133. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove low-k dielectric material therefrom at an etch selectivity ratio for the dielectric material to organic material of about 50:1 to about 1000:1; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 63:36 to about 70:30 % by volume; the composition having a pH of about 2 to about 6; the inorganic fluorine compound selected from the group consisting of hydrofluoric acid, ammonium fluoride, and mixtures thereof.

134. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively organic material and up to a minimal amount of low-k dielectric material therefrom; the aqueous solution comprising an inorganic fluorine compound and an organic acid in a ratio of about 1:100 (v/v), and having a pH of about 3 to about 4.

135. (new) The method of Claim 134, wherein the aqueous solution removes organic material at a rate of about 400 to about 600 angstroms per minute.

136. (new) The method of Claim 134, wherein the aqueous solution selectively removes the organic material at an etch selectivity ratio for the organic material to dielectric material of about 200:1.

137. (new) The method of Claim 134, wherein the aqueous solution removes the organic material at a rate of about 200 angstroms per minute and the dielectric material at a rate of about 1 angstrom per minute.

138. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove organic material therefrom at an etch selectivity ratio of about 200:1; the aqueous solution comprising hydrofluoric acid and an organic acid in a ratio of about 1:100 (v/v), and having a pH of about 3 to about 4.

139. (new) The method of Claim 138, wherein the organic material comprises a photoresist material.

140. (new) A method of treating a surface of a semiconductor substrate, comprising the step of:

applying an aqueous solution to the surface of the semiconductor substrate to selectively remove organic material therefrom at an etch selectivity ratio of the organic material to low-k dielectric material of about 200:1; the aqueous solution comprising up to about 2% by volume hydrofluoric acid and about 98-99% by volume aqueous organic acid, and having a pH of about 3 to about 4.

141. (new) The method of Claim 140, wherein the organic acid is an about 20-60% aqueous solution.